

## DEPARTMENT OF HEALTH SERVICES

Wisconsin Stat. ch 160 directs the Department of Health Services (DHS) to recommend health-based enforcement standards for substances found in groundwater and specifies the protocol for developing the recommendations. Recommended standards are sent to the Wisconsin Department of Natural Resources (DNR) and are submitted through the rule-making process as amendments to Wis. Admin. Code ch. NR 140. When requested, DHS develops health-based drinking water advisories for substances that do not have an enforcement standard.

DHS serves as a primary resource for information about the health risks posed by drinking water contaminants, and is charged with investigating suspected cases of water-borne illness. Toxicologists, public health educators, and epidemiologists employed in the Department's Division of Public Health work together to:



DHS Staff present on health implications of arsenic at an Ozaukee County well water informational event attended by over 150 members of the public. *Photo: Ozaukee County Public Health Department*

- Present water quality information and human health implications of groundwater and drinking water issues to the public through town meetings and conferences, as well as a wide variety of informational materials.
- Provide direct assistance to families via home visits, letters to well owners, and telephone consultations.
- Educate residents with contaminated water supplies on the health effects of specific contaminants and suggest strategies for reducing exposure until a safe water supply can be established.
- Provide supplemental advice and assistance in cases of organic vapor intrusion, when shallow groundwater is contaminated with volatile substances such as benzene and vinyl chloride and the contaminants are released as vapors from groundwater directly into buildings through the building foundation.
- Improve understanding of current and potential groundwater and drinking water issues related to human health in Wisconsin through exposure biomonitoring, disease surveillance, health assessment, and capacity and vulnerability assessment. Information from these activities assists project development, focus area prioritization, and research project support for academic work. This information also aids local and state agency work on groundwater-related public health issues.

### FY 2016 Highlights

- In 2015, five local public health agencies (LPHAs) completed projects related to contaminants in drinking water with grants from the Wisconsin Environmental Public Health Tracking (EPHT)

Program. Along with the funding, EPHT staff connected mini-grantees to subject matter experts and provided technical assistance related to epidemiology, communications, and evaluation.

- The Building Resilience Against Climate Effects or BRACE program provided mini-grant funding to 11 LPHAs to increase their capacity to respond to the health impacts of climate and extreme weather. Most communities identified groundwater as a public health priority area during BRACE-facilitated community meetings. These projects have also led funded LPHAs to engage in additional groundwater-related efforts, including:
  - La Crosse County, through a CDC grant, is working to increase public awareness of drinking water hazards and increase testing among private well owners.
  - Wood and Portage Counties have been revising their existing groundwater plan.
- DHS provides technical support for multiple LPHA efforts to increase public awareness of common private well contaminants and the importance of well testing. As an example, in March 2016, DHS staff presented on health implications of arsenic at an Ozaukee County well water informational event attended by over 150 members of the public.

## **Details of Ongoing Activities**

### **Reviewing Scientific Information to Develop Public Health Recommendations for Groundwater Contaminants**

At the request of DNR or LPHAs, DHS reviews technical information on substances that may be found in groundwater to determine whether health-based drinking water advisories or other public health recommendations should be considered. These reviews are typically conducted by the DHS Groundwater Standards Development program. In 2015, DHS reviewed the available scientific literature on 12 substances potentially associated with a handful of contaminated sites in Wisconsin. The outcome of the reviews may help guide future recommendations to residents should these substances be found in their drinking water wells.

In March 2016, the U.S. Environmental Protection Agency (EPA) released new drinking water health advisories for two perfluoroalkyl substances, perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS). EPA drinking water health advisories are non-enforceable guidance values for risk assessment purposes. DHS has been helping multiple LPHAs interpret the implications of these new health advisories and determining appropriate public health recommendations should these compounds be found in drinking water.

### **Providing Public Health Support for Manure Contamination Events that Impact Drinking Water**

Every year, instances of microbial contamination of drinking water wells follow the agricultural landspreading or accidental discharge of animal waste. Problems can occur when there are spills of stored or transported waste, when there is waste runoff due to excessive rain or snowmelt, or when waste is improperly applied. Such incidents can generate a lot of public interest, especially with respect to the immediate local public health response.

Responding to problems related to landspreading waste is a focus area for federal, state, and local agencies that have a regulatory role in agricultural practices. DHS does not have a defined regulatory role

for agricultural activities, but environmental health experts from DHS frequently participate on multi-stakeholder workgroups that examine agricultural practices related to manure storage, handling, and landspreading. These partners include the UW-Extension Understanding Manure Irrigation workgroup, which concluded its work during the spring of 2016 with the release of the workgroup report and accompanying webinar (see: <http://fyi.uwex.edu/manureirrigation/>). Other participation includes the Department of Agriculture, Trade, and Consumer Protection (DATCP) Livestock Siting Review Committee, which concluded its most recent review during the summer of 2015, as well as several DNR ad hoc groups. As a participant, DHS contributes public health expertise and perspectives during workgroup discussions.

In addition, through its Groundwater Standards Development program and On-call Chemical and Natural Disasters Emergency Response Team, DHS provides support to LPHAs responding to a broad range of groundwater contamination events, including those related to manure contamination. Such responses may include:

- Determining appropriate public health recommendations for users of affected drinking water wells.
- Developing and implementing health outreach efforts (through advisory letters, public meetings, fact sheets, etc.).
- Providing technical assistance to LPHAs that are responding to issues of groundwater and drinking water contamination.
- Facilitating communications between LPHAs and various state partners (e.g., DNR and DATCP).
- Providing well water testing capacity through the Basic Agreement with the Wisconsin State Laboratory of Hygiene for LPHAs conducting public health investigations in affected communities.

### **Response to Private Citizen Calls, Questions, Concerns, and Complaints**

DHS receives hundreds of inquiries each year regarding various environmental health concerns; many of these calls from the public are specifically about groundwater and drinking water concerns. Some of the drinking water/groundwater inquiries are related to concerns at individual residences. Others are related to concerns regarding active environmental cleanup projects, which can result in DHS conducting (or supporting) a comprehensive public health response for the site. These responses are often carried out by the DHS APPLETREE (Agency for Toxic Substance and Disease Registry's Partnership to Promote Localized Efforts to Reduce Environmental Exposures) program, which provides site-specific technical assistance to state and local agencies for testing, health assessment, and outreach on groundwater and drinking water contamination from present or past commercial or industrial practices and/or accidents.

As an example, DHS has been involved in a groundwater contamination investigation in a community near Lake Michigan where approximately 100 drinking water wells have been tested since 2013 because of groundwater contamination from a nearby former dump. About one-fifth of the wells tested had contaminants at high enough levels that residents were advised to not drink their well water or use it for food preparation. A few of these wells had contaminant levels that were high enough that residents were told to not use their water for drinking, food preparation, or showering. Throughout the investigation, DHS has served as a technical resource for DNR and the other city and county agencies involved, helping

state and local agencies determine and implement appropriate public health response actions. Some of these actions have included: providing bottled water and bulk water for affected homes, seeking more permanent clean water sources for affected homes, informing residents about the ongoing investigation, and answering residents' questions at several public meetings.

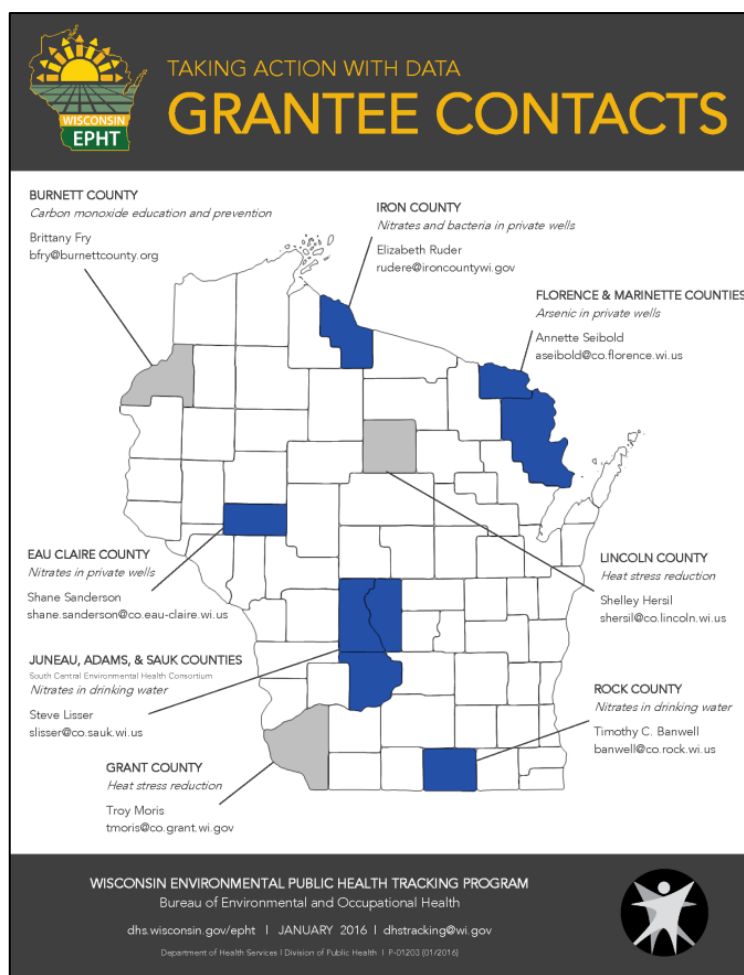
### **Increasing the Availability and Accessibility of Data and Information on Private Well Water Quality**

As a state partner in the Centers for Disease Control and Prevention's (CDC) Environmental Public Health Tracking (EPHT) network, DHS continually seeks to expand the availability and accessibility of data on environmental exposures and the chronic diseases for which they are risk factors. To this end, the DHS EPHT program has worked with UW–Stevens Point (UWSP) and the Wisconsin Association of Local Health Departments and Boards (WALHDAB) to support expansion of UWSP's Private Well Water Viewer to summarize and visualize data from LPHA water testing laboratories. Partnership with UWSP and WALHDAB has resulted in the addition of data from the Eau Claire City-County Health Department on the UWSP data portal. It is anticipated that other local laboratories will make their data available on this platform to support interventions such as well testing and community health assessment.

### **Taking Action with Data: Use of the Environmental County Health Profiles to Improve Environmental Health in a Community**

DHS continually seeks to provide data and resources to LPHAs to assist them to make positive public health improvements in their communities. As a state partner in the Centers for Disease Control and Prevention's (CDC) Environmental Public Health Tracking (EPHT) network, the Wisconsin EPHT Program developed a request for applications (RFA) for local and tribal public health agencies to apply for funds for a mini-grant project in 2015. Funds were used by LPHAs to explore data from the Environmental County Health Profiles and identify an environmental health concern in their jurisdiction. Based on the identified concerns, LPHAs developed and implemented a local initiative related to environmental health in their communities.

The Wisconsin EPHT Program and other staff from DHS provided ongoing support, technical assistance,



Local partners in EPHT initiatives across the state.

and guidance to LPHAs on epidemiology, communications, and evaluation throughout the project period. Regular conference calls and frequent emails with the LPHAs led to a positive collaboration: LPHAs were empowered to carry out their projects but still had support and assistance from the EPHT Program as needed. Some examples of technical assistance the EPHT Program provided LPHAs included: drafting multiple letters to simplify arsenic testing results to residents, providing guidance on surveys, developing a reverse osmosis fact sheet, and assisting in writing up success stories.

Eight LPHAs were awarded funds to carry out their projects. Of the eight funded LPHAs, five conducted projects related to contaminants in groundwater, clearly showing that groundwater is an important priority for many LPHAs. The five LPHAs conducting groundwater related projects included:

■ *Eau Claire County: Nitrate in Private Wells*

Eau Claire County worked to increase water sampling for nitrate, as well as advance research and collaboration. Mid-project (March 2016), over 25% of samples indicated nitrate concentrations exceeding the maximum contaminant level of 10 ppm. Eau Claire leveraged their working relationship with the Land Conservation Division to achieve higher sampling rates among private well owners and made initial connections to build an Eau Claire Nitrate Taskforce.

■ *Florence and Marinette Counties: Arsenic in Private Wells*

Florence and Marinette counties collaborated to increase well water testing for arsenic to residents of their jurisdictions. Testing kits were distributed using targeted outreach at town board meetings and an intense media campaign. Mid-project, Marinette distributed 153 tests; six wells tested higher than 10 µg/L. The highest arsenic level discovered was 170 µg/L and this individual was connected with the DNR Well Compensation Grant Program. Mid-project, Florence County distributed 97 tests, and about one in every five tests had elevated arsenic levels.

■ *Iron County: Nitrates and Bacteria in Private Wells*

Iron County worked to increase testing for nitrates and bacteria in private wells, specifically focusing on developing resources for a large sampling effort (including sampling, transportation, shipping, and analytics). Iron County contracted with the Environmental Research and Innovation Center at UW-Oshkosh to carry out the testing. They have also developed outreach and resource materials for their community members.

■ *Rock County: Nitrates in Drinking Water*

Rock County worked to identify and characterize nitrate sources in their community using multiple resources (e.g., National Land Cover Database, U.S. Department of Agriculture Crop Data Layers, and Rock County Land Use Maps). They have also identified geologic features that influence nitrates in water, including soil types and characteristics, as well as bedrock depth and type. This led them to create a Local High Capacity Well GIS layer. They are transferring sample results from the Rock County Health Department Well Nitrate Database to the UW-Stevens Point Well Water Quality Viewer.

■ *South Central Environmental Health Consortium (Juneau, Adams, and Sauk Counties): Nitrates in Drinking Water*

South Central Environmental Health Consortium worked to collect groundwater nitrate data for transient non-community (TNC) systems and private drinking water systems, consisting of a total

of over 21,000 data points. The data set was then narrowed to only include usable data that fits criteria for the project (2,762 private well data points and 6,760 TNC data points), leading to a project total of 9,522. These data were subsequently formatted, geocoded, and mapped. They will use these maps/data to look for trends, locate potential sources of contamination, and evaluate the statistical validity of the data.

### **Climate and Extreme Weather Vulnerability Assessment**

The DHS Building Resilience Against Climate Effects (BRACE) Program, funded by CDC, works to enhance DHS statewide capacity to prepare for and respond to the public health impacts of extreme weather events, such as impacts to private wells from heavy rainfall events.

Gaps identified previously by the Climate and Health Profile Report assessment have led to the development of several flood-related projects, with the goal of improving understanding of flood risk in specific watersheds and flood-related vulnerable populations. Flooding events can have profoundly negative effects on groundwater quality and public health, such as well contamination issues, impacts to aquifers from flood runoff, and chemical releases. These projects involve partnerships between DHS, UW Center for Climatic Research, Wisconsin Emergency Management (WEM), and a number of LPHAs. The findings from these flood-related projects have helped inform the BRACE Wisconsin Climate and Health Adaptation Plan, WEM's Wisconsin Hazard Mitigation plan, as well as LPHA and local emergency management planning processes.

As an example, in 2016, the BRACE program completed a geospatial analysis of the socioeconomic vulnerability and economic impacts of flooding in the Upper Fox River Valley. Study findings and applications of the information were summarized and disseminated to local public health and emergency management personnel.

The BRACE Program also continues to investigate climate and extreme weather impacts on groundwater resources, including changes to groundwater quality and quantity, climate indicators related to water supplies, and climate-related health impacts on residents who rely on groundwater resources for drinking water.

#### ***For more information***

Visit <http://www.dhs.wisconsin.gov/water/>

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